

## CLAIMS

What is claimed is:

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1. A method of making a MOSFET, comprising:  
providing a substrate having a gate oxide and gate thereon;  
performing a source/drain extension implant;  
forming a spacer on the gate;  
performing epitaxy to form raised source/drain regions;  
forming a silicide on the gate and source/drain regions;  
removing the spacer;  
performing a halo implant; and  
completing the MOSFET.

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2. A method as recited in claim 1, wherein the source/drain extension implant comprises an approximately vertical implant to a depth of approximately 10 nm to 30 nm of ions selected from the group consisting essentially of  $B^+$ ,  $BF_2^+$ ,  $As^+$ ,  $Sb^+$ ,  $P^+$ .

3. A method as recited in claim 1, wherein the spacer comprises a nitride.

4. A method as recited in claim 1 wherein the halo implantation comprises an approximately vertical implant to a depth of approximately 40 nm to 100 nm of ions selected from the group consisting essentially of  $B^+$ ,  $BF_2^+$ ,  $Ga^+$ ,  $In^+$ ,  $As^+$ ,  $Sb^+$ ,  $P^+$ .

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5. A method of making a MOSFET, comprising:  
providing a substrate having a gate oxide and gate thereon;  
performing a vertical source/drain extension implant to a depth of approximately 10 nm to approximately 30 nm;  
forming a spacer on the gate;

forming raised source/drain regions;  
forming a silicide on the gate and source/drain regions;  
removing the spacer;  
performing a halo implant; and  
completing the MOSFET.

6. A method as recited in claim 5, wherein the spacer comprises a nitride.
7. A method as recited in claim 6, wherein the spacer is removed by wet chemistry.
8. A method as recited in claim 5, wherein the source/drain regions are formed by epitaxy.
9. A method as recited in claim 5 wherein the halo implantation comprises an approximately vertical implant to a depth of approximately 40 nm to 100 nm of ions selected from the group consisting essentially of  $B^+$ ,  $BF_2^+$ ,  $Ga^+$ ,  $In^+$ ,  $As^+$ ,  $Sb^+$ ,  $P^+$ .
10. A method of making a MOSFET, comprising:  
providing a substrate having a gate oxide and gate thereon;  
performing an approximately vertical source/drain extension implant to a depth of approximately 10 nm to approximately 30 nm;  
forming a nitride spacer on the gate;  
performing epitaxy to form raised source/drain regions;  
forming a silicide on the gate and source/drain regions;  
removing the spacer;  
performing an approximately vertical halo implant to a depth of approximately 40

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nm to approximately 100 nm; and  
completing the MOSFET.

11. A method as recited in claim 10 wherein the halo implantation comprises implantation of ions selected from the group consisting essentially of  $B^+$ ,  $BF_2^+$ ,  $Ga^+$ ,  $In^+$ ,  $As^+$ ,  $Sb^+$ ,  $P^+$ .